ANTENATAL PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH ADVERSE POSTPARTUM FAMILY OUTCOMES

Lynn M. Wilson, MD, CCFP; Anthony J. Reid, MD, MSc, CCFP; Deana K. Midmer, BScN, MEd, FACCE; Anne Biringer, MD, CCFP; June C. Carroll, MD, CCFP; Donna E. Stewart, MD, FRCPC

Abstract • Résumé

Objective: To determine the strength of the association between antenatal psychosocial risk factors and adverse postpartum outcomes in the family, such as assault of women by their partner, child abuse, postpartum depression, marital dysfunction and physical illness.

Data sources: MEDLINE, Cinahl, Famli, Psych Abstracts and the Oxford Database of Perinatal Trials were searched for relevant articles published from Jan. 1, 1980, to Dec. 31, 1993, with the use of MeSH terms "depression, involutional," "child abuse," "child neglect," "domestic violence," "family," "marital adjustment," "family health," "newborn health," "child health," "physical illness," "social support," "psychosocial risk," "prediction," "risk factors," "obstetrics" and "prenatal care." Further articles were identified from bibliographies.

Study selection: Of the 370 articles identified through the search, 118 were included for review. Studies were included if they examined the association between psychosocial risk factors and the outcomes of interest. Articles were excluded if they were reviews of poor quality or they had one or more of the following features: insufficient description of the sample, a high attrition rate, a lack of standardized outcome measures, outcomes other than the ones of interest or results that had already been reported in a previous study.

Data extraction: The strength of evidence of each study was evaluated. On the basis of the evidence, each risk factor was assigned a rating of the strength of its association with each of the postpartum outcomes. The ratings were class A (good evidence of association), class B (fair evidence) and class C (no clear evidence). Of the 129 antenatal psychosocial risk factors studied, 15 were found to have a class A association with at least one of the postpartum outcomes.

Data synthesis: Child abuse and abuse of the mother by her partner were most strongly correlated (class A evidence) with a history of lack of social support, recent life stressors, psychiatric disturbance in the mother and an unwanted pregnancy. Child abuse was also strongly associated with a history of childhood violence in the mother or her partner, previous child abuse by the mother's partner, a poor relationship between the mother and her parents, low self-esteem in the mother and lack of attendance at prenatal classes. Postpartum abuse of the mother was also associated with a history of abuse of the mother, prenatal care not started until the third trimester and alcohol or drug abuse by the mother or her partner (class A evidence). Child abuse had a fair (class B) association with poor marital adjustment or satisfaction, current or past abuse of the mother and alcohol or drug abuse by the mother or her partner. There was class B evidence supporting an association between abuse of the mother and poor marital adjustment, traditional sex-role expectations, a history of childhood violence in the mother or her partner and low self-esteem in the mother. Postpartum depression was most strongly associated with poor marital adjustment, recent life stressors, antepartum depression (class A evidence), but was also associated with lack of social support, abuse of the mother and a history of psychiatric disorder in the mother (class B evidence). Marital dysfunction was associated with poor marital adjustment before the birth and traditional sex-role expectations (class A evidence), and physical illness was correlated with recent life stressors (class B evidence).

Conclusions: Psychosocial risk factors during the antenatal period may herald postpartum morbidity. Research is required to determine whether detection of these risk factors may lead to interventions that improve postpartum family outcomes.

Drs. Wilson, Reid, Biringer and Carroll and Ms. Midmer are assistant professors in the Department of Family and Community Medicine, and Dr. Stewart is professor in the departments of Psychiatry, Obstetrics and Gynecology, Surgery, Anaesthesia and Family and Community Medicine at the University of Toronto, Toronto, Ont. Dr. Stewart also holds the Lillian Love Chair of Women's Health at the Toronto Hospital, Toronto, Ont.

***Reprint requests to:** Dr. Lynn M. Wilson, St. Joseph's Health Center, 30 the Queensway, Toronto ON M6R 1B5*

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Objectif : Déterminer le degré d'association entre les facteurs de risque psychosociaux prénatals et les résultats nuisibles postpartum dans la famille, par exemple, agressions contre les femmes par leur partenaire, mauvais traitement aux enfants, dépression postpartum, problèmes matrimoniaux et maladie physique.

Sources de données : On a consulté MEDLINE, Cinahl, Famli, Psych Abstracts et la base de données d'Oxford sur les études périnatales pour y recenser les articles publiés entre le 1er janv. 1980 et le 31 déc. 1993 comportant les termes MeSH suivant : «depression, involutional», «child abuse», «child neglect», «domestic violence», «family», «marital adjustment», «family health», «newborn health», «child health», «physical illness», «social support», «psychological risk», «prediction», «risk factors», «obstetrics» et «prenatal care». On a aussi relevé d'autres articles provenant de bibliographies.

Sélection d'études : Des 370 articles trouvés à la recherche, on en a choisi 118 pour recension. Une étude était retenue si elle examinait l'association entre les facteurs de risque psychosociaux et les résultats recherchés. Les articles étaient rejetés si l'examen était de mauvaise qualité ou s'il comportait une ou plusieurs des caractéristiques suivantes : description insuffisante de l'échantillon, taux d'attrition élevé, absence de mesures normalisées des résultats, résultats hors du domaine d'intérêt ou ayant déjà été cités dans une étude antérieure.

Extraction de données : On a évalué la solidité des preuves apportées par chaque étude. On a ensuite attribué à chaque facteur de risque une note selon son degré d'association avec chacun des résultats postpartum. Il y a eu trois notes : catégorie A (données probantes de bonne qualité), catégorie B (données probantes de qualité moyenne) et catégorie C (aucune donnée probante claire). Des 129 facteurs de risque psychosociaux prénatals étudiés, on a jugé que 15 présentaient une association A avec au moins un des résultats postpartum.

Synthèse des données : Les mauvais traitements faits aux enfants et les agressions contre la mère par son partenaire présentaient une très forte corrélation (données probantes de catégorie A) avec un soutien social inexistant, de récents événements stressants dans la vie, un déséquilibre psychiatrique chez la mère et une grossesse non désirée. On a aussi relevé une forte association entre les mauvais traitements faits aux enfants et des antécédents de violence chez la mère ou son partenaire dans leur enfance respective, des mauvais traitement faits antérieurement à des enfants par le partenaire de la mère, une relation peu harmonieuse entre la mère et ses parents, une piètre estime de soi de la mère et une nonparticipation à des cours prénatals. On a aussi associé les agressions contre la mère postpartum à des antécédents du même genre chez celle-ci, à l'absence de soins prénatals avant le troisième trimestre et à un problème d'alcool ou de drogue chez la mère ou son partenaire (données probantes de catégorie A). On a repéré une association de qualité moyenne (catégorie B) entre les mauvais traitements faits aux enfants et un niveau peu élevé de satisfaction ou d'adaptation à la vie matrimoniale, des agressions courantes ou passées contre la mère et des problèmes d'alcool ou de drogue chez la mère ou son partenaire. Des données probantes de catégorie B ont permis d'associer les agressions contre la mère à une piètre adaptation à la vie matrimoniale, à des attentes classiques au sujet du rôle des conjoints, à des épisodes de violence subis par la mère ou son partenaire pendant leur enfance respective et à une piètre estime de soi de la mère. On a constaté une très forte association entre la dépression postpartum et une mauvaise adaptation à la vie matrimoniale, de récents événements stressants dans la vie et une dépression antepartum (données probantes de catégorie A), mais on l'a aussi associée à une absence de soutien social, à des agressions contre la mère et à des antécédents psychiatriques chez la mère (données probantes de catégorie B). On a associé les problèmes matrimoniaux à une mauvaise adaptation à la vie matrimoniale avant la naissance et aux attentes classiques au sujet des rôles de l'homme et de la femme (données probantes de catégorie A), et on a corrélé une maladie physique à de récents événements stressants dans la vie (données probantes de catégorie B).

Conclusions : Les facteurs de risque psychosociaux au cours de la période prénatale peuvent entraîner une morbidité postpartum. Des recherches s'imposent pour déterminer si le dépistage de ces facteurs de risque peut déboucher sur des interventions qui amélioreront la situation familiale après une naissance.

Modern prenatal care has focused almost exclusively on the detection of medical and obstetric problems. This emphasis on clinical surveillance of the physical health of the mother and the well-being of the fetus has been accompanied by a lack of attention to the social and psychological needs and resources of the mother and her partner.[1] However, there is increasing recognition of the importance of psychosocial issues during the antenatal period. For example, recent Canadian and US national guidelines for prenatal care recognize this area.[2,3] The guidelines state that the "prenatal period provides an opportunity to look beyond pregnancy and delivery and to marshall the resources essential for further healthy development of mother, infant and family."[3] Adverse postpartum psychosocial outcomes, such as postpartum depression,[2] child abuse and neglect, and family violence,[3] are highlighted in these guidelines. In a thorough review of the association be-

tween antenatal psychosocial factors and biomedical outcomes such as low birth weight, Culpepper and Jack[4] recommended that comprehensive assessment of antenatal psychosocial risk be integrated into medical and obstetric care. They categorized psychosocial risks as demographic or social characteristics, psychological factors and adverse health habits. They also reviewed prevention and management strategies for women at risk of having psychosocial problems. However, neither the national guidelines for prenatal care nor the review examined the relation between antenatal psychosocial risk factors and adverse postpartum family outcomes. They do not, therefore, provide clinicians with guidance in antenatal identification of individual parents or populations at risk of having these problems.

Although many pregnant women and their families experience significant difficulties during the postpartum period, the systematic detection of psychosocial risk factors and incorporation of psychosocial information into routine prenatal care has not yet become universal. As a step toward this goal, we conducted a comprehensive literature review to determine the strength of the association of antenatal psychosocial risk factors with the following adverse postpartum family outcomes: child abuse or neglect, assault of women by their partner, postpartum depression, marital dysfunction and physical illness.

No national data on reports of child maltreatment are available in Canada.[5] The reported rate of suspected child abuse or neglect in the United States in 1987 was 34.0 cases per 1000 children. It is difficult to estimate the number of unreported and undocumented cases of abuse. Existing estimates of the prevalence of child abuse differ, in part because of a lack of agreement on the definition of maltreatment and on methods for measuring it.

In a recent Canadian study involving women seen in a variety of clinical settings, the prevalence of assault of women by their partner during pregnancy was estimated at 6.6% on the basis of an anonymous self-report questionnaire.[6] Less than 3% of the physically abused pregnant women were identified by their prenatal care providers, although injuries were often visible. In a follow-up to this study, one of us (D.E.S.) found that the mean number of incidents of physical abuse per abused woman during the 3 months after delivery was significantly higher than the mean number of incidents during each trimester or during the 3 months before conception.[7]

Studies in which clinical depression was measured through semistructured clinical interviews and by standardized diagnostic criteria have shown that approximately 10% of women experience major depression postpartum.[8–10] Postpartum depression may increase the risk of later depression in the mother, which is associated with an increased risk of behaviour problems in the child.[11] As well, a prospective study involving a sample selected during the antenatal period showed that children whose mothers experienced depression during the first year of the child's life obtained lower scores on tests of cognitive functioning than other children.[12]

Several prospective cohort studies involving random or volunteer samples have shown that the transition to parenthood is often accompanied by a decline, which varies in duration, in the quality and functioning of the marital relationship.[13–15] Women may experience more negative changes than their partners.[15,16]

Psychosocial stressors are associated with increases in indicators of early childhood morbidity, such as the number of medical consultations[17,18] and attendance at a hospital for treatment of lower respiratory tract illnesses, gastroenteritis, accidents, burns, scalds and accidental poisonings.[17]

In preparing this article, five of us were each assigned to review the literature on one of the following postpartum outcomes: child abuse, assault of women by their partner, postpartum depression, marital dysfunction and physical illness. These outcomes were chosen for study on the basis of a preliminary review of the literature, which showed that they were significant concerns during the postpartum period. We searched MEDLINE, Cinahl, Famli, Psych Abstracts and the Oxford Database of Perinatal Trials for relevant articles published between

Table 1: Antenatal factors associated with adverse family outcomes in the postpartum period

Family factors
Poor marital adjustment or satisfaction
Lack of social support
Traditional, rigid sex-role expectations
Recent stressful life events
Domestic violence
Mother or her partner experienced or witnessed violence in childhood
Current or past abuse of the woman by her partner
Partner suspected of child abuse in past or of harsh discipline of children
Maternal factors
Poor relationship with parents
Low self-esteem
Past or present psychiatric disorder
Unwanted pregnancy (after 20 weeks)
Antepartum depression
Prenatal care not started until third trimester
Refused or quit prenatal classes
Substance abuse
By the mother or her partner

Jan. 1, 1980, and Dec. 31, 1993. The following MeSH headings were used to search these databases: "depression, involutional," "child abuse," "child neglect," "domestic violence," "family," "marital adjustment," "family health," "newborn health," "child health," "physical illness," "social support," "psychosocial risk," "prediction," "risk factors," "obstetrics" and "prenatal care." Further articles were identified through follow-up of the bibliographies of these studies.

Articles were included for review if they examined the association between antenatal psychosocial risk factors and the postpartum outcomes of interest. Many articles were excluded because they only described the outcome, how to recognize or diagnose it or theories concerning its cause. In addition, articles were excluded if they were traditional reviews (overviews), rather than systematic reviews, or if they had one or more of the following features: insufficient description of the sample, a high rate of attrition of subjects from the study, a lack of standardized outcome measures, outcomes other than the ones of interest (e.g., postpartum "blues" as well as depression) or results that had already been reported in a previous study. In total 370 articles (88 on child abuse, 97 on assault of women by their partner, 73 on postpartum depression, 70 on marital dysfunction and 42 on physical illness) were identified through the search. After reviewing the articles with the use of the exclusion criteria, we retained 118 articles (22 on child abuse, 34 on assault of women by their partner, 27 on postpartum depression, 24 on marital dysfunction and 11 on physical illness).

We developed an analytic framework for the evaluation of the articles by modifying the approach of the Canadian Task Force on the Periodic Health Examina-

Table 2: Antenatal psychosocial factors associated with adverse family outcomes in the postpartum period

	Outcome; class of association*				
Antenatal factor	Child abuse	Assault of mother by her partner	Postpartum depression	Marital dysfunction	Physical illness
Poor marital adjustment or satisfaction	B[22]	B[23,24]	A[10,25–32]	A[15,33–35]	No studies available
Lack of social support	A[36–43]	A[44–47]	B[27,30,48–51]	No studies available	C
Traditional, rigid sex-role expectations	No studies available	B[23,24,44,45,52]	No studies available	A[34,35,53,54]	No studies available
Recent stressful life events	A[22,37,38,43,55–57]	A[46,58–60]	A[25–29,48,50,61]	No studies available	B[17]
Mother or her partner experienced or witnessed violence in childhood	A[22,37,38,42,43,55–57]	B[23,24,44,52,60–64]	No studies available	No studies available	No studies available
Current or past emotional, physical, sexual or verbal abuse of the mother by her partner	B[37,38]	A[6,62,65–69]	B[7]	No studies available	No studies available
Partner suspected of child abuse in past or of harsh discipline of children	A[22,37,38,55, 57]	No studies available	No studies available	No studies available	No studies available
Poor relationship of mother with her parents	A[40,57]	No studies available	C[10,27,31,61]	No studies available	No studies available
Low self-esteem in the mother	A[22,37,39,43]	B[23]	No studies available	No studies available	No studies available
Past or present psychiatric disorder in the mother	A[22,40,42,43,55,56]	A[6,44,46,47,58,59,62,65,70]	B[25,27–30,71–73]	No studies available	No studies available
Pregnancy unwanted by the mother (after 20 weeks)	A[22,38,55–57]	A[40,65]	C	No studies available	No studies available
Antepartum depression	No studies available	No studies available	A[25–27,29,61,71,73,74]	No studies available	No studies available
Prenatal care not started until the third trimester	No studies available	A[47,75]	C	No studies available	No studies available
Mother refused or quit prenatal classes	A[55,56]	No studies available	No studies available	No studies available	No studies available
Alcohol or drug abuse by the mother or her partner	B[40]	A[6,24,44,47,52,62,65,76–79]	No studies available	No studies available	No studies available

*Class A = good evidence of association, class B = fair evidence and class C = no clear evidence.

Table 3: Studies of psychosocial risk factors associated with child abuse

Study (class of evidence*)	Design	Sample	Associated factors†	Limitations
Murphy et al[22] (II-1)	Prospective cohort	587 pregnant women in metropolitan Denver	Marital adjustment, life events, violence in childhood, child abuse, low self-esteem, psychiatric disorder, unwanted pregnancy	Outcome (abuse or neglect) was determined through a chart review 2 to 2.5 years later
Milner et al[36] (II-2)	Case–control	38 subjects; cases were abusive parents seen by the Department of Social Services in North Carolina	Social support	Small sample
Anderson[37] (II-2)	Case–control	62 subjects in an urban area in the southwestern United States	Social support, life events, violence in childhood, abuse of mother, child abuse, low self-esteem	Small sample, recall bias, questionable truthfulness of answers, conclusions based solely on mothers' responses
Strauss[38] (II-2)	Case–control	Probability sample of 1146 subjects in the United States	Social support, life events, violence in childhood, abuse of mother, child abuse, unwanted pregnancy	Rates of abuse were based on self-report, and the data were from families with two parents
Milner et al[39] (II-2)	Case–control	130 subjects seen at departments of social services in rural and urban North Carolina and at an Oklahoma medical centre	Social support, low self-esteem	Ability to predict child abuse based on responses to entire instrument, not to separate items, 50% participation rate among abusive parents
Schneider[40] (II-2)	Case–control	2250 children seen in obstetrics/gynecology or well-baby clinics (predominantly hospital based) in Denver	Social support, mother–parents relationship, psychiatric disorder, alcohol or drug abuse	Predictive ability determined for clusters of factors, not separate items
Zuravin[41] (II-2)	Case–control	518 women in Baltimore; cases were women whose families were receiving child protective services and had at least one child 12 years or under	Social support	Response rate was only 75%; nonrespondents were not characterized
Kotelchuk[42] (II-2)	Case–control	402 children in Boston; cases were children 4 years of age or younger admitted to hospital with a "social pediatric diagnosis"	Social support, violence in childhood, psychiatric disorder	Results not generalizable
Schneider et al[43] (II-2)	Case–control	500 mothers seen in a physician's office or a prenatal hospital clinic in Colorado and Michigan	Social support, life events, violence in childhood, low self-esteem, psychiatric disorder	Predictive ability was determined for clusters of factors, not separate items
Egan et al[55] (II-1)	Prospective cohort	200 mothers referred to a social work department in a maternity hospital in New Zealand perinatally because they were single parents or had social problems	Life events, violence in childhood, child abuse, psychiatric disorder, unwanted pregnancy, no prenatal classes	Selection bias, permanent care of child relinquished by mother, with or without her consent, was main outcome criterion
Muir et al[56] (II-2)	Case–control	738 subjects; cases were from social service referrals and controls from a random sample of expectant mothers in Dunedin, New Zealand	Life events, violence in childhood, psychiatric disorder, unwanted pregnancy, no prenatal classes	Short 2-year follow-up; early parenting difficulty, not abuse, was detected
Altemeier et al[57] (II-1)	Prospective cohort	1400 expectant mothers seen at a prenatal clinic in a hospital serving low-income families in Nashville, Tenn.	Mother–parents relationship, unwanted pregnancy	Short 2-year follow-up; results were not generalizable; the only outcome was reported physical abuse

*See text for definition of classes of evidence.
†Factors from Table 1 are given in précis form.

tion.[19] The strength of evidence presented in each study was classified as follows.

- *Class I:* evidence from randomized controlled trials or well-designed natural-history studies.[20]
- *Class II-1:* evidence from prospective cohort studies.
- *Class II-2:* evidence from case–control studies or systematic literature reviews.[21]

Table 4: Studies of psychosocial risk factors associated with abuse of women by their partners

Study (class of evidence)	Design	Sample	Associated factors	Limitations
Stewart et al[6] (II-1)	Prospective cohort	548 mothers seen at antenatal clinics in various locations in Ontario	Abuse of mother, psychiatric disorder, alcohol or drug abuse	Recall bias
Hotaling[23] (II-2)	Systematic review of 52 case–control studies	Not applicable	Marital adjustment, sex roles, violence in childhood, low self-esteem	Search limited to psychological literature
Telch et al[24] (II-2)	Case–control	100 subjects in Orange and Los Angeles counties in California; cases were couples in counselling for wife assault, controls were nonviolent couples	Marital adjustment, sex roles, violence in childhood, alcohol or drug abuse	Some nonvalidated measures; small sample; groups differed in family income
Bergman et al[44] (II-3)	Descriptive	49 women seen in an emergency department in Sweden	Social support, sex roles, violence in childhood, psychiatric disorder, alcohol or drug abuse	Selection bias, no control group
Lewis[45] (II-2)	Case–control	50 subjects; cases were from a spouse-abuse shelter, controls were seen at a health clinic in Tampa, Fla.	Social support, sex roles	Small sample; selection bias; Wife Abuse Inventory only validated for women with a low socioeconomic status
Amaro et al[46] (II-1)	Prospective cohort	1243 mainly poor, black or Hispanic, inner-city mothers seen at prenatal clinics associated with the Boston City Hospital	Social support, life events, psychiatric disorder, unwanted pregnancy	Results not generalizable
Campbell et al[47] (II-2)	Case–control	488 women in a metropolitan area of the midwestern United States, seen 2 to 5 days postpartum	Social support, psychiatric disorder, late prenatal care, alcohol or drug abuse	Results not generalizable; high (40%) rate of refusal to participate; convenience sample
Kantor et al[52] (II-2)	Case–control	2033 women interviewed by telephone in a national probability sample of randomly selected households in the United States	Sex roles, violence in childhood, alcohol or drug abuse	Self-report
Bullock et al[58] (II-2)	Case–control	797 subjects seen at Planned Parenthood clinics in Texas	Life events, psychiatric disorder	Demographic aspects of cases and controls not compared
Jaffe et al[59] (II-2)	Case–control	145 subjects; cases were from Ontario shelters for abused women, controls were recruited through a newspaper advertisement	Life events, psychiatric disorder	Selection bias; did not control for negative life events
MacEwen et al[60] (II-1)	Prospective cohort	275 newly married women in Onondaga and Suffok counties in New York, recruited through a newspaper advertisement	Life events, violence in childhood	Results not generalizable
Hilberman et al[62] (II-3)	Descriptive	60 abused women referred for psychiatric evaluation from a rural health clinic in North Carolina	Violence in childhood, abuse of mother, psychiatric disorder, alcohol or drug abuse	No control group
Gondolf et al[63] (II-2)	Case–control	251 subjects; 218 men admitted to a veterans' alcohol rehabilitation centre in Pennsylvania and a subsample of 33 partners	Violence in childhood	Results not generalizable

- *Class II-3*: evidence from studies comparing different sites and populations or from descriptive studies.
- *Class III*: evidence from traditional reviews (overviews) or from opinions of experts in the field.

Each article was reviewed and classified by one of us. To ensure that the classification procedure was reliable, the other authors independently read and classified three to five of the articles in each of the outcome areas. For each

Table 4 (continued)

Study (class of evidence)	Design	Sample	Associated factors	Limitations
Marshall et al[64] (II-2)	Case–control	454 single or dating undergraduates in Texas	Violence in childhood	Results not generalizable; definition of frequency of violence open to interpretation
Hilliard[65] (II-2)	Case–control	328 women seen at an obstetrics clinic at the University of Virginia Hospital, Charlottesville, Va.	Abuse of mother, psychiatric disorder, unwanted pregnancy, alcohol or drug abuse	Cases differed from controls in age, parity, education and socioeconomic status
Goldberg et al[66] (II-2)	Case–control	Random sample of 492 patients seen in an emergency department in Detroit	Abuse of mother	Results not generalizable; some differences between cases and controls in age, number in common-law relationships and education level
Stuart et al[67] (II-3)	Descriptive	30 women who identified themselves as battered women seen at an urban domestic crisis centre in Michigan	Abuse of mother	Small sample; weak internal consistency of items on Danger Assessment instrument
Stewart Helton[68] (II-2)	Case–control	292 patients seen at private and public antenatal clinics in metropolitan areas of Texas	Abuse of mother	Racial distribution different from general Canadian population
Poteat et al[69] (II-2)	Case–control	305 female employees at an institution for mentally retarded people in eastern North Carolina	Abuse of mother	Prevalence of abuse not stated; individual factors drawn from Wife Abuse Inventory
Bland et al[70] (II-2)	Case–control	1200 randomly selected noninstitutionalized residents of Edmonton	Psychiatric disorder	Questions regarding abuse on Diagnostic Interview Schedule differ from those in many other instruments
McFarlane et al[75] (II-1)	Prospective cohort	691 patients seen at public prenatal clinics in Houston and Baltimore	Late prenatal care	Results not generalizable; problems due to low socioeconomic status of many subjects and large proportion of adolescents in sample
Schuerger et al[76] (II-3)	Descriptive	246 men enrolled in group treatment for wife abuse in Cleveland	Alcohol or drug abuse	No controls; poor response rate in follow-up
Fagan et al[77] (II-2)	Case–control	172 subjects in California	Alcohol or drug abuse	Subjects not entirely matched with respect to significant sociodemographic variables
Berenson et al[78] (II-2)	Case–control	501 patients seen at a public prenatal clinic in Texas, a large proportion of whom were Hispanic or black	Alcohol or drug abuse	Results not generalizable
Miller et al[79] (II-2)	Case–control	85 subjects in New York state; cases were women seen at alcohol treatment agencies, controls were from households	Alcohol or drug abuse	Small sample; cases and controls differed with respect to income, changes in the women's families during childhood and presence of father–daughter violence and of an alcoholic parent

article, we prepared a summary that included the site, the population, the design, the classification of strength of evidence and limitations. Antenatal psychosocial risk factors found to be associated with the relevant postpartum outcome were then listed and given the classification of the relevant article.

After all of the articles concerning a particular postpartum outcome had been reviewed, the article summaries were circulated to the other authors. Each antenatal psychosocial risk factor was assessed by the whole group and assigned a rating according to the class of evidence supporting its association with each of the five different postpartum outcomes. Consensus was easily achieved in more than 90% of these cases. More difficult cases were resolved after discussion. No studies involved class I evidence.

On the basis of this review, we assigned ratings to each risk factor with the use of the following guidelines.

- *Class A:* There is good evidence of an association between the antenatal psychosocial risk factor and the outcome. This includes any risk factor for which at least one class II-1 and one class II-2 study demonstrate the association.
- *Class B:* There is fair evidence of an association between the antenatal psychosocial risk factor and the outcome. This includes any risk factor for which only class II-2 studies or only one class II-1 study and no class II-2 studies demonstrate the association.
- *Class C:* There is no clear evidence of an association between the antenatal psychosocial risk factor and the outcome. This includes any risk factor for which

Table 5: Studies of psychosocial risk factors associated with postpartum depression

Study (class of evidence)	Design	Sample	Associated factors	Limitations
Kumar et al[10] (II-1)	Prospective cohort	119 patients seen at an antenatal clinic in London, England, most of whom were middle- or upper-class	Marital adjustment, mother–parents relationship	Results not generalizable; women may have sought out clinic because of its reputation
O'Hara et al[25] (II-1)	Prospective cohort	362 patients seen at a public obstetrics/gynecology (ob/gyn) clinic and two private practices at a university teaching hospital in Iowa	Marital adjustment, life events, psychiatric disorder, antepartum depression	Included minor and major cases; validity and reliability of some measures not stated
Whiffen[26] (II-1)	Prospective cohort	124 mothers recruited from public health prenatal classes in Vancouver	Marital adjustment, life events, antepartum depression	Low (70%) response rate; nonrespondents not characterized
O'Hara et al[27] (II-1)	Prospective cohort	170 patients seen at a public ob/gyn clinic and private practices in Iowa	Marital adjustment, social support, life events, psychiatric disorder	Included major and minor cases; validity and reliability of social-network measure unclear
Paykel et al[28] (II-2)	Case–control	120 white women attending hospital postnatal clinics in London, England	Marital adjustment, life events, psychiatric disorder	Two interviewers; no determination of interrater reliability; validity and reliability of Raskin Three Area Depression Scale and Interview for Recent Life Events not stated
Watson et al[29] (II-1)	Prospective cohort	128 women seen at an antepartum clinic in south London, England, before 24 weeks' gestation	Marital adjustment, life events, psychiatric disorder, antepartum depression	Monthly contact with subjects for psychological assessments
O'Hara[30] (II-1)	Prospective cohort	99 patients seen at a public ob/gyn clinic and private practices in Iowa	Marital adjustment, social support, psychiatric disorder	Subjects had a high education level; validity and reliability of some measures not stated
Boyce et al[31] (II-1)	Prospective cohort	170 patients seen at a public maternity hospital in Sydney, Australia	Marital adjustment, mother–parents relationship	Women excluded if they were depressed during the second trimester; Edinburgh Postnatal Depression Scale includes minor self-limited illnesses
Cox et al[32] (II-1)	Prospective cohort	105 patients seen in antepartum clinics before 20 weeks' gestation in Edinburgh, Scotland	Marital adjustment	Small sample of women seen at the first appointment of the day, therefore sample not truly random

there is only class III evidence or extremely conflicting evidence.

Results

We studied a total of 129 antenatal psychosocial risk factors (Appendix 1) and their relation with the postpartum outcomes of interest. Of these factors, 15 were found to have a class A association with at least one of the postpartum outcomes (Table 1). These risk factors can be grouped into the general categories of family factors, domestic violence, maternal factors and substance abuse. The various definitions of these risk factors and the instruments used in the studies to determine their presence are listed in Appendix 2.

For the 15 strongest risk factors, the strength of evidence concerning their association with each of the five postpartum outcomes of interest in this review is presented in Table 2.

Child abuse

Child abuse was most strongly correlated (class A evidence) with a history of lack of social support, recent life stressors, a history of childhood violence in the mother or her partner, partner suspected of child abuse or of harsh discipline of children, a poor relationship between the mother and her parents during childhood, low self-esteem in the mother, psychiatric disturbance in the mother, unwanted pregnancy and lack of attendance at prenatal classes (Tables 2 and 3). There was fair (class B) evidence of an association between child abuse and poor marital adjustment or satis-

Table 5 (continued)

Study (class of evidence)	Design	Sample	Associated factors	Limitations
Martin et al[48] (II-2)	Case–control	236 subjects; most cases from psychiatric inpatient unit of University Hospital of South Manchester, England, controls from the general population	Social support, life events	Results not generalizable
Cutrona et al[49] (II-1)	Prospective cohort	55 mothers from a university hospital obstetrics clinic and from Lamaze and exercise classes (location not specified)	Social support	Small sample; Beck Depression Inventory (BDI) includes mild cases and may have a retest effect
Cutrona[50] (II-1)	Prospective cohort	71 mothers seen at the obstetrics clinic of a teaching hospital, attending Lamaze classes or answering newspaper advertisements in Iowa	Social support, life events	Social Provisions Scale not validated for pregnant women and has low test–retest reliability
Stein et al[51] (II-1)	Prospective cohort	483 mothers seen at a hospital antepartum clinic in Oxford, England	Social support	Validity and reliability of Montgomery Asberg depression scale not stated
O'Hara et al[61] (II-1)	Prospective cohort	170 mothers seen at a public ob/gyn clinic and private practices in Iowa	Life events, mother–parents relationship, antepartum depression	BDI used; participants who dropped out were younger on average and more likely to be single and to be black than other participants
Hapgood et al[71] (II-1)	Prospective cohort	66 mothers seen at hospital antepartum clinics and private practices in New Zealand	Psychiatric disorder, antepartum depression	Antenatal assessment was conducted at 36 wk; therefore, some retrospective reporting was required
O'Neill et al[72] (II-2)	Case–control	66 postnatal visits to public health nurses in Dublin, Ireland	Psychiatric disorder	Data for controls was provided by general practitioners and public health nurses
O'Hara et al[73] (II-1)	Prospective cohort	99 women seen at a public ob/gyn clinic and in private practices in Iowa	Psychiatric disorder, antepartum depression	BDI used
Gotlib et al[74] (II-1)	Prospective cohort	A heterogeneous population of 295 mothers in London, Ont.	Antepartum depression	Participants who dropped out were more likely to have had antepartum depression than other participants

faction, current or past abuse of the mother by her partner and a substance-use disorder in the mother or her partner.

Definitions of child abuse differed among many of the studies. Some data were obtained from case records rather than from structured interviews. The subjects of many studies were limited to populations that were demographically distinct (in terms of location, race, social status or marital status). Many of these studies used a case–control design, and some did not specifically examine the presence of these risk factors during pregnancy. However, many of the findings from these retrospective studies were confirmed by a prospective, double-blind cohort study involving 1400 pregnant women, which employed a standardized interview format.[57] Many of the studies of child abuse examined the sensitivity of checklists of risk factors, rather than of individual factors, in predicting child abuse.

Assault of women by their partner

There was good (class A) evidence of an association between assault of women by their partner and lack of social support, recent stressful life events, current or past abuse of the mother, current or past psychiatric disorder in the mother, unwanted pregnancy, inadequate prenatal care and alcohol or drug abuse by the mother or her partner (Tables 2 and 4). Abuse was also associated, although more weakly, with poor marital adjustment or satisfaction, traditional, rigid sex-role expectations, a history of childhood violence in the mother or her partner, and low self-esteem in the mother.

There were many methodological issues in this area of research. Different definitions of abuse were used to define the samples of abused women. Women were recruited through different settings (e.g., women's shelters, emergency departments or physicians' offices) and methods (e.g., telephone surveys and advertisements). The accuracy of self-reporting may have been affected by the fact that having been abused is considered socially undesirable, by the respondents' perceptions and by their faulty recall. Studies often neglected to report

Table 6: Studies of psychosocial risk factors associated with marital dysfunction and with physical illness

Study (class of evidence)	Design	Sample	Associated factors	Limitations
Marital dysfunction				
Russell[15] (II-2)	Case–control	Random sample of 511 couples in Minnesota	Marital adjustment	Response rate of 56% to mailed questionnaires; nonrespondents experienced more distress than respondents
Lewis[33] (II-1)	Prospective cohort	38 couples from Timberlawn Psychiatric Research Foundation, Dallas	Marital adjustment	Small sample; results not generalizable; Continuum of Marital Competence not validated for couples with children; insufficient detail concerning setting
Tomlinson[34] (II-1)	Prospective cohort	96 volunteer couples, 94% of whom were white and middle-class, attending childbirth classes (location not specified)	Marital adjustment, sex roles	Results not generalizable
Belsky[35] (II-1)	Prospective cohort	61 couples recruited for the Pennsylvania Infant and Family Development Project, all of whom were white, middle-class, well-educated and married	Sex roles	Results not generalizable, small sample
Grossman et al[36] (II-1)	Prospective cohort	93 volunteer couples seen at private obstetrics clinics at teaching hospitals in Boston, of whom most were middle- or upper-class and some lower-class	Marital adjustment, sex roles	Results not generalizable
LaRossa et al[53] (II-1)	Prospective, qualitative	20 white middle- or upper-class couples in California	Sex roles	Results not generalizable
Physical illness				
Beautrais[17] (II-1)	Prospective cohort	1082 children 1 to 4 years of age in urban areas of New Zealand	Life events	No antenatal assessment, results not generalizable

negative findings. Some of the studies included in this review involved samples of women who were not pregnant. Because violence may occur throughout a woman's life and women who report abuse during pregnancy are often abused preconception and postpartum as well,[6] these studies were retained.

Postpartum depression

There was good evidence of an association between the following antenatal psychosocial risk factors and postpartum depression: poor marital adjustment or satisfaction, recent stressful life events and antepartum depression (Tables 2 and 5). There was fair evidence of an association between postpartum depression and lack of social support, current or past abuse of the mother by her partner and current or past psychiatric disturbance in the mother.

There were more prospective cohort studies concerning postpartum depression than concerning the other four postpartum outcomes in this review. However, many of the studies of postpartum depression were conducted at a single hospital or clinic, restricting the generalizability of the results. Studies used different criteria to diagnose depression, although we included only studies in which standardized instruments were employed. For example, some studies relied primarily on symptom-severity indices, which may be confounded by the normal physiological changes during pregnancy and the puerperium. In some studies, the repeated antenatal assessments may have provided social support and helped prevent postpartum depression. Results may have varied because women were recruited at different intervals before childbirth and because depression was diagnosed at different points during the postpartum period. Different risk factors may be relevant during different periods; as a result, the comparison of results of the studies may be influenced by the timing of the postpartum assessment.

Marital dysfunction

Postpartum marital dysfunction was associated with poor antenatal marital adjustment and traditional, rigid sex-role expectations (class A evidence, Tables 2 and 6). Many of the samples consisted of white, middle-class, married volunteers, often recruited from prenatal classes or antenatal clinics. Therefore, the generalizability of these results to other groups is limited.

Physical illness

There were very few studies examining the relation between antenatal psychosocial stressors and physical illness in family members during the postpartum period. There was fair (class B) evidence of an association between recent stressful life events and illness in children from a cohort study of 1082 children 1 to 4 years of age[17] (Tables 2 and 6).

Discussion

This comprehensive, critical appraisal of the literature yields 15 antenatal psychosocial risk factors that are associated with an increased likelihood of one or more adverse postpartum family outcomes. Unlike most studies of antenatal psychological and social factors, which tend to focus on biomedical outcomes, the outcomes of interest were primarily psychosocial. This review is a step toward broadening routine prenatal care to include systematic, evidence-based detection of psychosocial risk factors and to incorporate psychosocial information.

The limitations of this review should be noted. There are no agreed-upon "gold standards" for the definitions of the risk factors or the outcomes. Many of the studies were limited in regard to the site (often a tertiary care centre), the population examined (e.g., inner-city, black, poor children in studies of child abuse or middle-class, white, married couples in studies of marital dysfunction) or the number of subjects. Many of the studies of child abuse examined whether the outcome could be predicted with the use of existing scales or tools involving multiple factors. It was therefore difficult to determine the influence of one risk factor in isolation. The studies of abuse of women by her partner mainly involved women who were not pregnant.

Furthermore, the risk factors identified are those for which there were sufficient data. There has been a tendency to study maternal factors and to place much less emphasis on paternal, family and community influences. Because of this tendency, there is the potential for "mother-blaming" and underestimation of the role of the father. As shown in Table 2, many areas have not been studied.

Priorities for future research include determining the prevalence and distribution of adverse postpartum outcomes in general populations, case finding for these adverse outcomes in high-risk populations, determining factors associated with positive postpartum outcomes (which may serve as buffers when psychosocial risk factors are also present), and developing and evaluating preventive interventions.

Association does not necessarily imply causality. As we have mentioned, some of the risk factors have not been studied independently, and many of them are interrelated.

This review summarizes the associations between antenatal psychosocial risk factors and postpartum family outcomes. It will be important to focus future efforts on

systematic identification of mothers and families at risk as well as on interventions offered to them. As a step toward this goal, we are developing a form to enable health care providers to screen routinely for psychosocial risk factors during the prenatal period. Ideally, this enquiry will become a standard part of preconception care. We hope that such a form will help educate health care providers, serve as a reminder to ask patients about relevant psychosocial problems, facilitate the collection and recording of information, help target allocation of resources and funds to high-risk populations and ultimately lead to interventions that improve postpartum family outcomes.

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Appendix 1: Antenatal psychosocial risk factors assessed for possible association with adverse postpartum family outcomes

Factors in the marriage or family
Poor marital adjustment or satisfaction
Divorce sought
Religion
Religious incompatibility
Unmarried status
Duration of marriage
Educational or occupational incompatibility
Social isolation
Low family income or social class
Frequency of arguments
Poor sex life
Infrequent sexual intercourse
Problems caused by pregnancy
Recent stressful life events
Family problems
Death of close relative
Addition of third adult to family
Parenting problems
Absent father
Overcrowded or chaotic living arrangements
Number of children residing in the household
Harsh discipline of children

Factors affecting the mother
Witnessed violence as a child or adolescent
Experienced violence as a child
Past or present abuse
Past or present psychiatric problem
Previous suicide attempt
Low socioeconomic status
Alcohol or drug abuse
Low education level
Somatic complaints, conversion symptoms
Low self-esteem
Emotional needs unmet
Distress
Low intelligence
Criminal record
Poor health habits
Frequent pregnancies
Beginning to work outside the home
Poor health
Rigidity in attitudes
Age
Unwanted pregnancy (after 20 weeks)
Lack of attendance at prenatal classes
Working during pregnancy
Change of role associated with giving up work
Antepartum depression
Lack of prenatal care
Parity
Number of previous pregnancies
Employment
History of menstrual problems
Previous therapeutic abortion
Previous miscarriage
Previous gynecologic problem
Country of origin
Race
Relationship with parents
Frequent medical visits
Previous physical illness requiring admission to hospital
Current illness
Dissatisfaction with leisure activities
Smoking at end of pregnancy
Chronic illnesses in mother or family
Previous abnormal delivery
Anxiety during pregnancy
Hostility during pregnancy
Higher than normal emotional lability during pregnancy
Social adjustment
Previous experience with children
Late menarche
Lack of sexual enjoyment
Lack of self-confidence
Self-image as immature and dependent
Bereavement
Self-control behaviours
Poor coping skills
Interpersonal sensitivity
Interpersonal events
Dysfunctional attitude
Low locus of control
Prepartum attributions
Personality factors
Depression in first-degree relative
Mental disorder in second-degree relative
Disturbed family relationships during childhood
Unhappy childhood
Problems in present relationship with mother
Poor relationship with mother during childhood
Loss of mother
Poor relationship with father during childhood
Loss of father
Problems in present relationship with father
Poor relationship with mother-in-law

Factors affecting pregnancy and childbirth
Stressful events related to pregnancy, labour and delivery
Unplanned pregnancy
Duration of pregnancy
Length of time to conception
Previous consideration of therapeutic abortion
Mother's feelings on discovering pregnancy
Mother troubled by "old wives' tales"
Complications during pregnancy
Length of labour
Subjective impact of labour
Abnormal delivery (cesarean section, instrumental delivery)
Complications of delivery
Mother's satisfaction with care
Mother's degree of participation in care
Sex of baby (baby of unpreferred sex)
Breast-feeding
Mother's expectation of difficulty with infant

Factors affecting mother's partner
Age
Interest in pregnancy
Presence at delivery
Sexual aggressiveness toward mother
Violence toward children
Witnessed violence in family of origin
Experienced violence as a child or adolescent
Need for power or dominance but low assertiveness
Criminal arrest record
Extreme jealousy
Psychopathology
Alcohol abuse
Low education level
Low income
Low self-esteem

Appendix 2: Definitions of antenatal psychosocial risk factors strongly associated with adverse postpartum family outcomes

Risk factor	Definitions used in articles reviewed
Poor marital adjustment or satisfaction	Marital problems[22] Attempted separation or divorce[24] Husband rates marriage as a less important part of his life than does his wife[38] Woman feels that partner does not love her[27] Poor communication[28] Score on Dyadic Adjustment Scale[10] Score on Locke–Wallace Marital Adjustment Test[50]
Lack of social support	Social isolation[40] Lack of social, instrumental or emotional support from spouse[27]
Traditional, rigid sex-role expectations	Woman feels emotionally, financially or materially dependent on her partner[44] Inequitable division of labour[34]
Recent stressful life events	Life stressors experienced during previous year (e.g., financial problems, illness of parent, legal problems, move, work problems, death of friend or family member)[38] Score on Life Events Inventory[50] Score on Social Readjustment Rating Scale[28] Score on Pilkonis Life Events Schedule[10]
Mother or her partner experienced or witnessed violence or neglect in childhood	Sexual exploitation in childhood[44] Severe discipline,[37] deprivation[22] or "unfair" severe punishment in childhood Mother placed in foster care during childhood[57]
Current or past emotional, physical, sexual or verbal abuse of the woman by her partner	Woman is hit, slapped, pushed, has objects thrown at her,[68] choked, assaulted with weapon, burned,[67] tied up or whipped[66] Man controls, criticizes and denigrates partner[68]
Partner suspected of child abuse in the past or of harsh discipline of children	Official report of mild or severe abuse Child placed in foster care Death of child Current frequent spankings or use of belt Physical punishment of baby before crawling Sadistic or dangerous punishment[22] Children show evidence of punishment[37] Belief that physical punishment is acceptable[38] Cursing at child Calling children names[37]
Poor relationship of mother with her parents	Lack of closeness to mother[40] Feeling that parents were displeased with her in childhood[57]
Low self-esteem in mother	Mother does not feel good about herself[37] Mother feels that she is "usually unsuccessful" in life[57]
Past or present psychiatric disorder in mother	Current psychosis Chronic psychiatric problems Chronic depression[22]
Pregnancy unwanted by mother (after 20 weeks)	Child unwanted[22] Mother changed decision concerning relinquishment of child for adoption[55]
Antepartum depression	Score on Beck Depression Inventory[61] Score on Centre for Epidemiologic Studies — Depression scale Score on Hamilton Rating Scale for Depression[73] Result of Goldberg's Standardized Psychiatric Interview[30]
Prenatal care not started until third trimester	Self-explanatory
Mother refused or quit prenatal classes	Self-explanatory
Alcohol or drug abuse by mother or her partner	Heavy alcohol use (may include self-reports, black-outs, need for an "eye-opener", loss of control, dependency on alcohol, drinking more than he or she should have during the last year, hallucinations or delirium tremens in the abstinence phase) Use of illicit drugs (e.g., marijuana, cocaine or opiates) as determined by urine assay or self-report[46] Daily or periodic use of sedatives or hypnotics (usually benzodiazepines) by mother to induce sleep Continuous abuse of sedatives and hypnotics by partner[44]